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We

must be fully aware of the severity and complexity of our country's environmental situation and the importance and urgency of increasing environmental protection. Protecting the environment is to protect the homes we live in and the foundations for the development of the Chinese nation. We should not use up resources left by our forefathers without leaving any to our offspring. China should be on high alert to fight against worsening environmental pollution and ecological deterioration in some regions and environmental protection should be given a higher priority in the drive for national modernization.

by Premier Wen Jia-bao

Address to the 6th National Conference on Environmental Protection

April 17, 2006

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Executive Summary

The China Council for International Cooperation on Environment and Development Task Force on Environmental Governance assembled a group of environmental policy experts and academics from China, Germany, the Netherlands, Japan, and the United States to examine means for developing more effective environmental governance strategies for China. The Task Force surveyed the status of environmental governance in China and across East Asia, the European Union, Japan, and the United States to form the basis for the recommendations in this report.

The Task Force was convened because China is facing unprecedented challenges in its efforts to protect the environment and natural resource base. The rapid deterioration of the nation's environmental quality and depletion of its natural resources are threatening the lives and health of the largest population in the world and the very potential for sustained growth of the economy. In response, the Chinese government has recently elevated the importance of environment protection in its national development strategy.

However, the Task Force believes that what is required is a more dramatic and comprehensive shift in approach to these problems. In essence, China must reform important elements in its approach to environmental governance. The challenges that China faces are no less vexing and important than the challenge of economic reform, the restructuring of the management of state owned enterprises (SOEs), and the challenge of effectively managing the state's (and the people's) financial assets that are so key to the economic aspirations of the nation. The environment and natural resources of China are no less critical assets of the

nation, representing the patrimony of the people, and no less deserving of good governance. As development proceeds and more citizens are lifted from poverty, their attention naturally focuses on enjoying their new lives, enjoyment that requires a healthy environment. The government has set a goal of achieving the Xiaokang Society by the year 2020. The common representation of this goal is primarily in terms of material wealth. However, material wealth without the good health to enjoy it is an unsatisfying outcome. Therefore, the Task Force recommends that a set of measures and institutional innovations be adopted similar in scope to those for the economic reform which will insure that the environmental and natural resource wealth of the nation will be preserved and enhanced to support the welfare of the people.

In his April speech during the Sixth National Environmental Conference, Premier Wen Jiabao emphasized the importance of three transitions, the transition (1) from a focus on economic growth to a focus on environment and economic development; (2) from environment as a lagging objective to equal importance with economic development; and (3) from the primary use of administrative methods of environmental management to a more comprehensive system combining many approaches. Some positive moves have been made in this direction. The government has begun to consider evaluating the performance of local government leaders on environmental performance rather than just focusing solely on economic growth categories. To aid this evaluation, there have been experiments with measuring Green GDP, of a number of cities and provinces in China. These are extremely interesting steps. However, if China is to embark on these transitions, significant institutional changes are necessary.

The Task Force notes that to be successful the process of reform should be systematic and driven by the goal of improving environmental governance. As the experience of the economic reforms has shown, picking just one or two international experiences for adoption without consideration of a comprehensive plan of reform is not likely to achieve the goal. Specifically, the Task Force believes China would benefit greatly by strengthening its environmental governance in four major issue areas:

- (1) Improving the government's capacity to enforce environmental laws and oversee the implementation of environmental programs, to enhance the government's capacity to control environmental pollution, and to improve the management of natural resources;
- (2) Engaging the business sector to take a more proactive role in environmental management by providing incentives to those that perform well and punishing those that do not, and by promoting best practices of industrial production and hazardous accident preparedness;
- (3) Engaging civil society by providing greater transparency of information concerning environmental and natural resource conditions and of government decision-making activities, combined with access and participation by stakeholders, NGOs, and the general public, and;
- (4) Establishing greater policy coherence and planning capacity for both domestic and international environmental and natural resource issues.

To put China firmly on the path of the three transitions, the following action items are recommended by the Task Force on Environmental Governance in each of the four major issue areas:

1 Government

The first major challenge identified by the Task Force (TF) is the insufficient administrative authority and capacity accorded to the State Environmental Protection Administration (SEPA) in policy planning, implementation, and coordination with related agencies. The second major challenge comes from a policy approach that tends to be reactive;¹ responding to pollution problems once they occur, rather than proactive and preventive;² working to limit the extent and range of pollution problems and natural resource destruction before they occur. The third major challenge is in relation to the development of multi-sector and public access

and participation in policy-making, enforcement, monitoring, and evaluation. Accordingly, the Task Force on Environmental Governance makes the following recommendations.

1.1 Executive Branch

(1a) Elevate SEPA to full cabinet rank in the government.

(1b) Establish a leading group on national environmental issues chaired by the Premier, with membership comprised of the Ministers of all relevant agencies and the Secretariat provided by SEPA.

(1c) Reforming the institutional status of SEPA will place new burdens upon it to enhance the effectiveness of its policy, planning, and evaluation process. Especially, SEPA will need to develop internal mechanisms for coordination across departments to build more comprehensive policy regimes and integrated databases whose elements may require cooperation from several traditionally independent management responsibilities. Internal vetting of policy proposals will insure that the strongest possible initiatives emerge from SEPA's internal process, and require that all policy proposals are evaluated for their environmental, economic, and social impacts. A mechanism for identifying new and emerging environmental threats also needs to be developed.

(1d) Improve multi-level governance by realigning local environmental management to create a direct line of authority to provincial environmental protection bureaus (EPBs). This can be done by giving provincial governments the power to appoint local environmental protection bureau directors and requiring provincial governments to provide the budget for local EPB operations. In addition, SEPA can enhance the performance of local management by providing financial support to those provinces in greatest need of resources, by charging the new regional SEPA offices with the responsibility to coordinate and guide local implementation efforts, and by establishing performance requirements for environmental outcomes reviewed for conformity by SEPA.

(1e) Enhance the scientific basis of environmental management by developing science and technology capacity within SEPA to assess and manage major environmental issues across major pollutants and industrial sectors by providing SEPA with the authority to establish independent advisory commissions in particularly salient and complex issue areas. These commissions should have a legal status with requirements for membership to be drawn from government, business, and civil society. The work of these commissions should be documented in a publicly released report. SEPA should also be provided with the resources to support research in cooperating universities and research institutions to improve scientific and societal understanding of emerging environmental problems and aid in the development of practical solutions.

(1f) Enhance the capacity of the environmental administrative system of China's central government by increasing the budget and size of SEPA in order for it to adequately meet its responsibilities of analysis, monitoring, regulation, technical and professional training, and enforcement. Provide funding, through SEPA grants, for the costs of demonstrating new innovative environmental management programs in cooperation with participating local environmental bureaus.

1.2 Legislative Branch

(1g) Strengthen the legal foundations of environmental management. Insure that all environmental policy tools have an appropriate legal basis. Remove the inconsistencies between environmental laws and the laws governing natural resources and energy.

(1h) The National People's Congress capacity to develop and oversee the implementation of the nation's environmental laws should be strengthened. The Committee on Environment and Natural Resources in particular should have a standing professional staff and budget to allow effective inquiries and analysis to be conducted so as to inform the process of revising current laws and enacting new ones. The Provincial People's Congresses and Municipal Assemblies

also could have such committees.

1.3 Judicial Branch

(1i) Train judges and the procuracy in environmental problems and solutions to make them aware of the extensive damages to human health and the environment caused by various types of emissions. Equip them with knowledge of the tools and resources available to them in making decisions in complex environmental liability and compensation cases.

2 Business

The Task Force on Environmental Governance (TF) is of the opinion that the immense power of the market to address environmental problems should be harnessed to create a resource efficient and environmentally friendly society. Furthermore, in view of the knowledge and capital accumulated in the non-public sector, every effort should be made to mobilize these resources to facilitate the smooth implementation of environmental management.

Performance-based environmental responsibilities either required by the government or self-imposed by companies seeking to thrive in the globally competitive economy will create additional space for innovation towards ecological modernization of China. Economic incentives can energize business and harmonize economic and environmental goals.

(2a) Establish clear legally enforceable environmental responsibilities for enterprises and maximize compliance by insuring that the suite of government incentive programs targeted to business are environmentally coherent in the direction of creating an environmentally friendly society. Reinforce compliance by establishing penalties for non-compliance with environmental laws and regulations that recapture any financial benefit from non-compliance. Use the penalty structure to create a deterrent to pollution. Strengthen civil penalties for pollution damage and criminal penalties for the most severe violations. Additionally, provide incentives for companies to improve environmental management, move towards cleaner technology and products, and thus go beyond mere compliance.

(2b) Establish reporting requirements for data to assure comparability of data across facilities and over time. Provide funding for the establishment and maintenance of an internet-based reporting system, with source by source data publicly available to all stakeholders. Public access to and analysis of environmental and natural resource data will enhance data quality and source accountability.

(2c) Establish civil and criminal liability laws for damages caused by operators of facilities responsible for environmental pollution and accidents. Provide rigorous standard methodologies for the calculation of environmental damages.

(2d) Require companies to report the presence of chemicals and other hazardous substances and establish emergency response plans and mechanisms with the requirement for timely reporting of any accidents.

(2e) For the special case of the management of hazardous wastes and toxic substances, establish a Hazardous Substances Response Fund for clean up of emergency spills. This can be financed with a tax on companies using hazardous substances which, in turn, becomes an incentive to reduce their use.

(2f) Enhance corporate environmental responsibility by requiring the designation of a corporate officer as the individual legally responsible and accountable for environmental compliance. Encourage environmental audits and annual public environmental reporting commensurate with annual financial reports. SEPA should require the disclosure of environmental liabilities by Chinese companies prior to Initial Public Offerings.

(2g) Develop public-private partnerships and dialogues among government, business, and non-governmental organizations to leverage the individual resources, perspectives, and capacities of these stakeholders to find commonly agreed solutions.

3 Civil Society and Public Participation

The complexity and quantity of the environmental issues confronting all nations today has

overwhelmed the capacity of even the strongest and best prepared governments. Most developed countries have, as a result, opened their societies to greater environmental NGO participation. They have removed many of the legal, political, and financial obstacles that existed to the full realization of the capacity of non-governmental groups. The Chinese government is responding and has become increasingly open to civil society participation in environmental decision-making and implementation. The Task Force on Environmental Governance is of the opinion that strengthening this reform through the following measures is necessary to achieve effective environmental governance.

(3a) Enhance the legal status of citizens and NGOs, clarifying their rights in environmental controversies and providing them legal standing in the courts on behalf of injured parties and the environment.

(3b) Conduct outreach and education of the public about the chances and opportunities to participate in environmental decision-making.

(3c) Establish public advisory bodies convened around specific issues for the purpose of broadening government consultation with civil society.

(3d) Improve public access to environmental information concerning emissions and their consequences in order to empower meaningful public participation. Widely publish advance notice of proposed regulations or permit proceedings for industrial and natural resource projects to facilitate public participation.

(3e) Mitigate any barriers limiting citizen and NGO participation by streamlining the procedures for NGO registration, appointing NGO representatives to advisory boards and commissions, and educating non-governmental groups about the government's perspectives and processes to enable participation.

(3f) Enhance NGO capacity by clarifying the regulations concerning the qualifications necessary to achieve tax advantaged status.

4 International Cooperation

The Task Force has concentrated its focus on the domestic elements of environmental governance. However, increasingly the serious environmental problems we face are beyond the scope of any one individual nation. Global environmental threats such as stratospheric ozone depletion, climate change, biodiversity loss, cycling of persistent organic pollutants, water shortage, and soils degradation require coordinated international action for their solution. The Task Force recognizes that effective international action is dependent upon sovereign willingness and capacity to act effectively and that individual sovereigns may be constrained in their commitments by this capacity. The recommendations on improving environmental governance - if adopted - will however enhance this capacity. China's rise in the global economy has made the nation vital to the international efforts to conserve the global ecology.

(4a) As part of the on-going regional free trade negotiations, China should propose to other nations in the region the establishment of an environmental commission to promote a comprehensive regional approach to the protection, improvement, and sustainable management of its natural resources. This commission should include mechanisms for environmental dispute resolution and participation by civil society from the participating nations.

(4b) China should prepare for playing a more active role in the implementation and further development of ratified international environmental conventions and multilateral environmental agreements, especially on climate, biodiversity, desertification, persistent organic pollutants, water and forests, in order to insure that the mutually agreed goals of such agreements are met and fortified. Especially, the instrumental basis of such agreements needs to be enlarged in order to balance economic and environmental interests and to make win-win situations possible.

(4c) Enhance the effectiveness of China's environmental diplomacy and participation in global environmental governance by strengthening the environmental training of China's diplomatic corps.

Report of the Task Force on Environmental Governance in China

1 Background

The China Council for International Cooperation on Environment and Development Task Force on Environmental Governance (henceforth, TF) assembled a group of environmental policy experts, academics, from China, Germany, the Netherlands, Japan, and the United States to examine means for developing more effective environmental governance strategies for China. Environmental governance refers to the formal and informal institutional mechanisms used by a society to address pollution problems, promote pollution control and prevention, conserve nature, and manage the use of natural resources.

Whereas the term "government" focuses attention on governmental bodies and actors, the word "governance" points to the processes used to control or coordinate social or economic activities, achieve societal goals and deal with policy problems. Environmental governance thus is usually understood to include not only the kinds of top-down mechanisms frequently used by governments to regulate behavior that affects the environment, but also other non-regulatory approaches, such as voluntary mechanisms or educational tools, that can be used to improve environmental conditions. Environmental governance, moreover, addresses the relationships that governments have with market actors, civil society, and the scientific community.

The TF surveyed the status of environmental governance in China through case studies on biodiversity protection, climate policy, sulfur dioxide emissions, the urban environment, solid waste management, sand storms and desertification, the role of non-governmental organizations, the Songhua River benzene accident, and enforcement of environmental laws and regulations. In addition, the TF examined environmental governance approaches across East Asia, the European Union, Japan, and the United States and in relation to specific experiences in urban air pollution, environmental disaster response and prevention, and renewable energies. These case studies became the basis for the recommendations of the TF for how China could work to strengthen environmental governance so that it might achieve more effective environmental outcomes.

China is facing unprecedented challenges in its efforts to protect the environment and natural resource base (see Qi, Su & Chen: "China's Biodiversity Governance", Case Study). The rapid deterioration of the nation's environmental quality and depletion of its natural resources are threatening the lives and health of the largest population in the world and the very potential for sustained growth of the economy. One out of every five cities in the country suffers from serious air pollution resulting in more than 400,000 premature deaths per year; about two thirds of all cities experience shortage of drinking water; one third of the land area is affected by acid rain; one third of land suffers from soil erosion and desertification; more than 90% of natural grasslands are degraded; overall biodiversity is threatened and environmental disputes and protests are rising (see on this the various Case Studies cited).

On September 7, 2006 SEPA released its first report on China's "Green National Economy", also called "green GDP", calculated by subtracting the cost of natural resources used and environmental degradation from the GDP. According to this

methodology, environmental pollution cost China 511.8 billion yuan (approx. 64 billion U.S. dollars) in economic losses in 2004, accounting for 3.05 % of the GDP. The report also exposed a huge shortfall in environmental protection investment. It said China would need 1.08 trillion yuan (approx. 135 billion U.S. dollars) to clean up all the industrial pollutants and household wastes produced. But the actual investment was only 190 billion yuan (or 24 billion U.S. dollars).

Based on a newly developed Environmental Performance Index (EPI) ranking of 133 nations on 16 indicators of environmental quality and policy performance, China ranked 94th, below all the developed and many of the developing nations of the world (see Center for Environmental Law at Yale University and CIESIN: Environmental Performance Index, 2006). Moreover, not only is China currently the second largest greenhouse gas emitter in the world after the United States, projections are that due to a number of geographical, social, and climatic conditions, China will be hit by climate change much harder than many other countries (see Qi & Ma: "Towards a Proactive Climate Policy", Case Study). These and other threats call for urgent action and effective environmental governance.

The Chinese government has recently elevated the importance of environment protection in its national development strategy. Environmental protection is critical for implementation of the scientific development concept, for achieving a Xiaokang society, as a test of how well the government is serving the people and building its capabilities, and for ensuring the construction of an environmentally harmonious society. Key ingredients of this goal are:

- protection of citizens' health
- enhancement of national environmental and resource patrimony

The 11th Five-Year Plan (2006-10) set clear goals related to environmental protection. These include promotion of energy efficiency, pollution control and resource conservation so as to be able to cut energy consumption per unit of GDP by 20% and major pollutants by 10%, relative to 2005 levels by the end of the 11th Five-Year Plan, and to increase forest coverage to 20% of the country from its 2005 level of 18.2%. Profoundly, the achievement of these targets will be taken as indicators to evaluate the performance of governments at various levels.

Increasingly China is no longer a country in transition to a market economy. Arguably it has arrived. With it comes the need to transform environmental institutions that have responded relatively slowly to the extraordinarily rapid changes in the economy at large. This mis-match in the speed of change and response is a significant source of many of China's environmental problems. Reforming environmental governance therefore is a top priority if China is to succeed in achieving its environmental goals. This reform includes the rationalization of government management, the strengthening of the legal foundations, a greater reliance on market-based policies, and the constructive engagement of business and of civil society. Furthermore, a systematic review of past experiences with existing policy mechanisms and responses to problems should be undertaken to learn what has worked, what has not and why. Achieving the country's national development goals while enhancing environmental quality and improving protection of natural resources, will require effective environmental governance. Effective environmental governance is characterized by a pro-active, learning and self-correcting system where the government has the capacity to enforce environmental policy; where systematic use is made of scientific based reporting, monitoring and decision making; where adoption of best available practices by business and industry, including preventative, not simply reactive policy measures is promoted; where multi-sector and citizen access and participation in environmental protection is encouraged; where strategic and comprehensive efforts are made to harmonize the environmental and the economic policies of the entire nation, and where innovative leadership is supported.

Measured by these standards, the TF has found some serious challenges in environmental

governance in China. These findings confirm and complement those of other researchers and recently published studies, including the Organization for Economic Cooperation and Development (OECD: "Governance in China", 2005) and the State Council's "White Paper on Environmental Protection in China, 1996-2005" (2006).

2 Challenges

2.1 Government Capacity

The first major challenge identified by the TF is the insufficient administrative authority and capacity accorded to the State Environmental Protection Administration (SEPA) in policy planning, implementation, and coordination with related agencies. The Environmental Protection Law of China provides that SEPA be the lead agency for environmental protection for the nation. Given China's vast size, large population, and tremendous environmental needs, this means that SEPA has been given immense responsibilities. Yet, in sharp contrast with the expectations placed on SEPA as the lead government agency in charge of assuring the health of the nation's environment, SEPA's capacity to improve environmental conditions is severely limited, due to insufficient staff and resources and communication among environmental agencies. In essence, its administrative capacity is exceedingly weak. The fact that SEPA lacks full cabinet status in the government makes it difficult for SEPA to participate in critical environmental decision-making involving policy planning, coordination with other ministries and agencies, the setting of national environmental priorities, and in resolving environmental disputes. SEPA has been mandated to develop and implement environmental policies, but it has not been given adequate policy tools, capacity or political strength to fulfill this expectation. SEPA cannot succeed in protecting the nation's environment without the collaboration of other government bodies, as many environmental responsibilities are shared across agencies and levels of government. Instead of cooperating to promote good environmental outcomes, different governmental bodies tend to compete with each other for limited resources and influence. Thus, SEPA often finds itself in conflict with the priorities of other institutions, but lacks adequate capacity to address this problem. Environmental considerations, moreover, are not adequately incorporated into the expectations of performance of other government ministries and agencies. In order to fulfill Premier Wen Jia-bao's stated objective of elevating the status of environmental protection to a level equal in importance to economic growth, environmental goals will have to be given greater weight in the performance evaluations of the economic, transportation, financial and other ministries and agencies as well. This is what is basically meant by the term policy integration.

There are other problems of environmental governance in a multi-level system.

Environmental administration at the local level is susceptible to interference by local leaders due to the relationships between the vertical and horizontal lines (tiaokuai guanxi) of government. Lower level Environmental Protection Bureaus (EPBs) formally report to higher level EPBs (and ultimately to SEPA), but the funding and supervisory functions are provided by the provincial or lower level administration. The lack of sufficient financial resources for environmental administrations at the local level (and occasionally at the national level) to perform their required tasks is creating perverse incentives with deleterious environmental impacts. Many EPBs have become dependent on the pollution levies they collect, which yield substantial revenues and are used to cover their operating costs. This means indirectly, that EPBs have an incentive to allow industries to pollute so that they can collect pollution fees. In the United States, permit fees are levied per ton of allowable discharge, but the permit fees are quite low and the objective is to provide funds for the operation of the permit program rather than as a primary tool of environmental policy. In China, in contrast, the pollution levy system has served as the government's primary policy tool but with limited effectiveness. Given that effective environmental protection requires familiarity with local conditions, good

environmental governance requires that flexibility be built into the system that can accommodate geographic and economic differences. Local and provincial governments are key stakeholders in environmental management and need to be included in decision-making. The new government responsibility system for environmental performance is one means of promoting local governmental involvement in meeting environmental performance goals. Mechanisms to reward good performers, to encourage better performance among moderate performers, and to punish those who flout the system are necessary. It will also be necessary to make explicit what is expected of local governments in terms of minimum program elements and performance criteria. Incentive structures to promote sustainable development at the local level should be strengthened. Finally, the central government should have a means in place to step in in cases where local performance is inadequate or efforts to incorporate environmental considerations in local outcomes are non-existent.

2.2 Reactive, Unintegrated, and Uncoordinated Policies

The second major challenge comes from a policy approach that tends to be reactive; responding to pollution problems once they occur, rather than proactive and preventive; working to limit the extent and range of pollution problems and natural resource destruction before they occur. Many avoidable environmental problems occur because of the failure of government and industry to adopt best practices in the first place. Policies such as the three simultaneous and the EIA are designed to address this problem, but they have systematic defects:

- lack of feedback and review
- lack of an effective non-compliance penalty

The penalty and liability structure if set as a pollution deterrent can cause firms to focus on the elimination of pollution rather than its treatment and disposal. Strict liability rules for the damages resulting from either pollution or accidental discharge will put firms on notice that ineffective environmental management will be dangerous to their financial health, if not survival. Under these rules, firms will avoid pollution and its financial consequences in the first place.

There is also a lack of capacity for dealing with problems when they arise. The pollution of the Songhua River by a large benzene spill in November, 2005 is a case in point (see Mao, Li & Li; Analysis of the Songhuajiang Crisis; Case Study). The siting and permitting of potentially dangerous industrial facilities did not require the development of emergency response plans in the event of industrial accidents involving hazardous or toxic chemical spills. For other environmental problems involving trans-boundary pollution such as the persistent pollution of the Huaihe River, neither the capacity nor the tools to manage regionally are robust. Traveling across many jurisdictions, this type of pollution poses a severe challenge to the fundamental law on environmental management which establishes the primacy of local control. The annual spring sandstorms are another example of both a cross-sectoral and trans-boundary environmental problem (see Hu, Zhang & Sun: Analysis of the Root Causes of Sandstorms in China; Case Study). To the extent that economic development planning can move toward realization of a circular economy; this should have positive environmental benefits. Better integration of environmental and development policies and plans with the market is imperative for achieving the Chinese government's goal of sustainable development. The bottleneck growth of coal-fired electric generating plants without a comprehensive evaluation of alternative means to expand electricity supply, or the financial necessity for such investments, or the full environmental consequences of these investments is a case in point.

However, even with the best of planning and preventive action, accidents will still occur and emergency situations may arise, as with the explosions at the 101 Petrochemical Plant in Jilin that spilled an estimated 100 tons of benzene and nitrobenzene into the Songhua River, one of

the worst chemical accidents in China's history. If such environmental emergencies cannot be completely prevented, they at least require prompt and effective responses (see Percival & Schreurs: "Environmental Crisis Management – A Comparative Analysis", Occasional Paper). Emergency policies and plans, appropriate legal and technical infrastructure, and accident reporting and response mechanisms must be established to reduce environmental risks and harms to society. Numerous incidents that have occurred throughout the country—such as a cadmium spill in the Beijiang River in Guangdong Province, chemical spills in the Hunjiang River and the Xiangjiang River, and an oil spill in Ganjiang River—reveal a nationwide lack of adequate emergency response systems and mechanisms. These accidents are also very costly. In 2005, environmental accidents cost an estimated 105 million yuan (approx. U.S.\$13.125 million) (<http://english.sina.com/china/1/2006/0419/73271.html>).

2.3 Capacity outside the Government

The third major challenge is in relation to the development of multi-sector and public access and participation in policy making and enforcement. In the past, the government has assumed primary responsibility for environmental protection in China in a top-down regulatory fashion. However, in March of 2005, in his report of the work of the government to the National People's Congress, Premier Wen Jia-bao recognized that the government cannot be responsible for solving all problems that society faces. He urged other groups in society including non-governmental organizations (NGOs) to become actively involved. Harnessing the energies and capacities of civil society to be more actively engaged in developing solutions for environmental problems will enhance the prospects of actually building an environmentally harmonious society.

The experiences and lessons from, Europe, Japan and the United States suggest that environmental goals can not be achieved unless all sectors in the society—government, business, NGOs, and the general public—are involved. Environmental protection is a shared responsibility, and effective environmental governance requires that the perspectives, experiences, and abilities of different actors be incorporated in planning and implementation decisions and actions. Public participation by all stakeholders should be a guiding principle in the making of all future environmental policies and laws.

In recent years, the Chinese government has exhibited its determination to address the country's severe pollution problems. The central government has shown considerable leadership with its formulation of environmental laws and programs. Nevertheless, many problems still remain. Achieving sustainable development will require leadership at all levels of government and society and by all people in the country.

In view of these serious challenges, the TF believes China will benefit greatly from strengthening its environmental governance. Based on our own case studies and deliberations, and building on the findings of other academic and professional bodies which have also examined environmental governance issues in China, it is the TF's recommendation that significant and specific action be taken in the following four issue areas:

- I. Improve the Government's Capacity to Enforce Environmental Laws and Oversee the Implementation of Environmental Programs
- II. Adopt Best and Safe Practice Measures in Business and Industry
- III. Enhance Stakeholder and Citizen Participation
- IV. Establish Greater Multi-Sector Coherence and Foresight and Improve International Environmental Cooperation

Some details on these four issue areas and the respective action items shall be given in the following.

3 Task Force Recommendations

3.1 Improve Government's Capacity to Enforce Environmental Laws and Regulations

Many of the kinds of pollution and natural resource issues facing China today were experienced in Japan, the United States, and Europe in earlier decades and some of the same problems remain today. The significant improvement in the control of environmental pollution over the past half century and the current focus on environmentally friendly enterprise among OECD nations is the result of public awareness and expectations, scientific advancement, societal learning, and strong governmental leadership in moving societies in this direction. In Japan and the West, substantial capacity now exists in the internal management of environmental agencies. Many steps have been taken to assure systematic monitoring, oversight, enforcement, and continuous scientific data collection and analysis. As a result, substantial improvements have been made in energy and resource efficiency levels and pollution control. These changes have not been achieved easily or always in the most efficient manner, yet they have been accomplished without undermining the economic growth and the quality of life enjoyed by the affected populations. In fact, these changes were necessary to protect the health of citizens and to reverse dangerous levels of resource degradation. Indeed, these changes have in many cases done much to improve quality of life and even the economic performance of firms.

Improving environmental governance in the European Union, Japan, and the United States has required the adoption of stringent environmental protection legislation, substantial policy experimentation and learning, development of the administrative and managerial capacity within governments and businesses to carry out the provisions of environmental laws, the allocation of substantial public and private resources, and unrelenting pressure from the general public and involvement of the NGO community. In every instance of sustained environmental improvement it has required the expectation in the society that there will be strong enforcement of environmental policy and leadership from the nation's top government officials and central environmental agencies (see Gade & Faur: "The United States Environmental Policy System: An Evolution in Federal vs. Local Control"; Occasional Paper).

China has made enormous strides in this regard since the establishment of the Lead Group of Environmental Protection under the State Council in 1974 and the National Environmental Protection Agency (NEPA) in 1984. The elevation of NEPA to the State Environmental Protection Administration in 1998 was a particularly important development. And while SEPA only has a few hundred officials working directly for it, there are also thousands of village, county, municipal, and provincial level EPBs to assess, monitor, and protect the environment and natural resources of the nation. Nonetheless, as indicated by the TF's case studies and in the numerous academic and research reports by Chinese and international scholars, the pace of economic, industrial, and urban development in China and the resultant environmental degradation to water, air, land and human health, has outpaced the ability of SEPA and the EPBs to provide the level of environmental protection intended in the nation's laws and expected by the leaders and the people of China.

It is the opinion of the TF that this imbalance needs to be redressed as the single most important step in improving the environment, health, and quality of life in China, while the nation continues to develop economically. The situation calls for significantly enhancing the capacity and role of SEPA and its counterpart EPBs to ensure the successful realization of the ambitious environmental goals of the law and of the 11th Five Year plan; goals and laws cogently summarized and restated in the State Council's recently published "White Paper on Environmental Protection in China, 1996-2005".

To create the needed administrative and managerial capacity within the government commensurate with the multi-faceted challenges of environmental protection in China, the TF recommends the following actions be taken by the central government.

1a. Elevating SEPA

SEPA lacks the stature and power of other government ministries. It does not have capacity commensurate with its responsibility to implement the law and protect the environment. A major step in remedying this situation is to elevate SEPA to cabinet rank.

The experience in nations as diverse as Japan, Germany, and the United States all substantiate the need to elevate a nation's environmental agency to the highest level of government in order to imbue it with the power, prestige, and visibility necessary to serve as a counterweight to the competing forces in the government, and in society. In 1971, the Netherlands added environmental protection to the responsibilities of the Ministry of Public Health and Environment; in 1982, environmental protection was moved to the Ministry of Housing, Spatial Planning and the Environment. In the wake of the Chernobyl nuclear accident and rising concerns about acid rain and stratospheric ozone depletion, in 1986, the German federal government combined the environmental responsibilities that had been held by three separate ministries (interior, agriculture, and health) into the Federal Ministry for Environment, Nature Conservation, and Nuclear Safety. When in 2001 the Japanese government restructured its government and cut the number of ministries in half, it created only one new ministry: the Environment Ministry. The United States has not created a Department of the Environment, but the Environmental Protection Agency's Administrator is accorded Cabinet rank and reports directly to the President. Providing SEPA with this level of standing within the government is important in light of the expectation that development and resource consumption in China must be harmonized with environmental protection and resource conservation in order to ensure a more sustainable society. Elevating SEPA will also provide it greater access and accountability to the nation's senior political leadership.

Action item: Elevate SEPA to full cabinet rank in the government.

1b. Streamlining EPBs and Aligning them with SEPA

Coordinating and aligning the disparate interests at the local, regional, and national level of society around environmental policy objectives and the management of natural resources has been one of the more difficult challenges faced by every OECD nation that has developed the capacity to oversee management of its resources and addressed the serious problems of pollution that accompanied industrialization. The experiences of the nations of the EU, Japan, and the United States suggest that there is no single best solution to the challenge of reconciling and balancing local and regional needs and conditions with national goals. The federalized systems of environmental protection with the European Union, the United States, and Germany all operate on different models. The critical consideration for effective coordination among units in a federal system is that the sub-national administrative units that are responsible for the implementation of national law and policy have environmental protection as a very high priority.

The sub-national units are usually provided with the flexibility to adjust for regional variations, and in some instances with the ability to develop regulations more stringent than those promulgated nationally. An example of the latter can be found in the TF case study of clean air policy in Los Angeles, where a critical factor in the success in cleaning the air was due to the ability of the State of California to impose clean air standards that exceed those established by the Environmental Protection Agency of the United States (see Mazmanian: "Achieving Air Quality" "The Los Angeles Experience," Occasional Paper). The European Union operates on the basis of subsidiarity, meaning that environmental protection should occur at the lowest governmental level appropriate to the issue. Local environmental problems, thus, are the responsibility of local authorities. In contrast, environmental matters that are of transnational scope or impact typically are the responsibility of the European Union. The European Union, through qualified majority voting, establishes EU-wide environmental regulations and directives that member states must then transcribe into domestic law. EU directives usually leave member states quite some freedom to adapt goals

and requirements to their specific situation. As is the case with California in the United States, individual member states of the EU do have the authority to establish environmental regulations that are more stringent than those established by the EU commission in Brussels as long as it can be shown that this is being done for environmental reasons (and not simply to obtain competitive advantage).

Establishing the appropriate balance between national goals and local-regional goals and interests has required relinquishing of some regional autonomy in pursuit of national environmental goals, which has necessitated greater communication, the development of trust, and coordination among the national, regional and local levels of government. The improved inter-governmental relations has also helped in addressing cross-jurisdictional environmental problems at the sub-national level, such as managing at the watershed or air basin, or metropolitan level of a problem. In effect, in establishing a relatively few but connected levels of environmental agencies in Japan and the West, a balance has been struck that ensures a reasonably uniform implementation of national laws and regulations, provides for systematic performance evaluation based on national goals, while remaining fairly responsive to local needs and special circumstances. Moreover, the greater the integration and coordination among national and sub-national levels, the greater is the information sharing and policy learning possible throughout the entire system of environmental governance. China, with its more than 2,500 different environmental units at the county, municipal, provincial, and state level, has encountered extraordinary problems in inter-unit coordination and cooperation. This stems in part from the varying local interests and critical economic development pressures bearing upon the tens of thousands of actors involved. It is the result of the unusual degree to which responsibility for environmental protection and enforcement has been devolved to the lowest levels of government in China. This problem in organization has been exacerbated by the far higher priority given to economic growth over environmental and resource protection until quite recently. The consequence, repeatedly cited in the scientific literature (see Literature and TF Occasional Papers, and Case Studies) and experienced by those responsible for environmental protection at the higher levels in China is that the sheer number of administrative units, their relatively weak capacity, their accountability primarily to the local government and appointed officials, and economic over environmental priorities has seriously undermined the goal of harmonious environmental-economic development.

Finally, many if not most EPBs lack the resources to develop the scientific, technical, and managerial capacity needed to effectively carry out their mission, especially in the rapidly growing and complex urban settings of China (see Hu, Zhang, Zhang & Qin: 'Urban Environmental Governance in China,' Case Study). The exception to the general pattern is the coordination and leadership found in a small number of major metropolitan centers, such as in Dalian, Nantong, Shanghai and Xiamen (OECD, op.cit.,p. 20), or in the plans for new eco-communities, such as Dongtan on the island of Chongming, and generally at the provincial level where the resources, capacity, and leadership in harmonious development exists. In these cases, the talents and resources have continued to grow and expand to better match the scale of their environmental problems.

There is no fixed or simple organizational solution to matching environmental agencies to the size and scale of the problems they confront, but it is clear that China represents an extreme mis-match with its thousands of local EPBs struggling to address problems that are often of a transboundary or regional nature. It is the judgment of the TF that this must be rectified if China is to successfully address its pollution and resource protection needs and meet its ambitious goals in the 11th five-year plan. In considering various options, the TF believes that as a minimum, EPBs should be consolidated at the metropolitan level for all major urban centers throughout the nation. A second order of consolidation could occur at the provincial

level. In addition, the funding for the provincial and metropolitan EPBs should be shared by the provinces, metro areas, and the central government. This is to ensure shared inter-governmental responsibility, coordination, and monitoring on the one hand, and fidelity to national environmental goals on the other. For these same reasons, professional and managerial training for environmental management and the career development of those within these agencies should be a joint-responsibility, though primarily directed by SEPA. The intent of this recommendation is to provide a corrective to the serious fragmentation of environmental policy units in China today, along the lines developed over decades of experimentation in the OECD nations as they moved into the more advanced stages of economic development and environmental harmonization.

Action item: Improve multi-level governance by realigning local environmental management to create a direct line of authority to provincial environmental protection bureaus (EPBs).

1c. Providing Multi-Sector Oversight Capacity within SEPA

The range and severity of China's environmental problems has led to the expectation that SEPA should and will enhance its regulatory reach across numerous industrial sectors, a growing number of large and small firms, and out to China's many regions and communities. To accomplish this, however, will require the addition of scientific, technical, and managerial capacity. At the same time, and as a note of caution, the experience elsewhere has shown the perceived need for capacity can seem endless. While the resources and capacity of national environmental ministries varies across the OECD countries, by almost any measure the resources and capacity of SEPA are insufficient. This is the case whether measured by the number of personnel relative to population size, by per capita expenditure, per regulated unit of industry or industrial unit per expenditure, or in relation to funding for development ministries.

Moreover, it has been the experience of national environmental agencies elsewhere, that even those with considerable internal capacity, in a number of important areas require additional specialized knowledge; in these cases, they have found it necessary to convene independent assessment and advisory bodies to the agency. Examples include the regular establishment of study groups on specific environmental problems by governmental agencies in Japan; the creation of Enquete Commissions of the federal parliament in Germany, made up of politicians, scientists, industry representatives and NGOs that address specific environmental issues, and the regular contracting out of research questions to environmental think tanks and universities in the United States. It is the recommendation of the Task Force that SEPA should be provided the authority and resources to convene such bodies.

Action item: Develop science and technology capacity within SEPA to assess and manage major environmental issues across major pollutants and industrial sectors. Provide SEPA with the authority to establish independent advisory commissions in particularly salient and complex issue areas.

1d. Providing Resources commensurate with SEPA's Responsibilities

It has been the experience elsewhere that when making the above recommended types of changes;^a such as streamlining through consolidating smaller governmental agencies, improving coordination across levels of government, enhancing data gathering, improving agency management, and establishing clear performance expectations;^a can produce budgetary savings. However, the savings are not always reflected in the central government's budget allocation to the national environmental agency. The costs are usually captured by private sector actors seeking guidance, technical assistance, and permits from the agency, and the local governments that no longer are expected to totally fund and operate their own environmental agency.

The scope and scale of the environmental problems facing China are enormous. Yet, the personnel and resources provided to SEPA are relatively small compared with the country's

geographical size, population, and environmental problems. SEPA has only on the order of 2,200 employees (219 administrative staff in its Beijing headquarters and about 2000 staff working in various national offices and centers affiliated with SEPA). Even if SEPA moves forward with its plans to establish six regional offices and hire another 180 employees, the manpower of the administration is comparatively rather weak.

As points of comparison, the U.S. EPA employs 18,000 people in its Washington, D.C. headquarters, 10 regional offices (located in Boston, New York, Philadelphia, Atlanta, Chicago, Dallas, Kansas City, Denver, San Francisco, and Seattle), and more than a dozen laboratories (including the National Risk Management Research Laboratory of the Air Pollution Prevention and Control Division in Research Triangle Park, North Carolina and the National Enforcement Investigations Center Laboratory in Denver, Colorado). The German Federal Environment Ministry (BMU) has 830 employees in its principle offices in Bonn and Berlin and another 1,880 in its three affiliated federal agencies: the Federal Environment Agency (Umweltbundesamt), the Federal Agency for Nature Conservation (Bundesamt für Naturschutz), and the Federal Office for Radiation Protection (Bundesamt für Strahlenschutz). In addition, the 16 German Länder have their own environmental administrations as the German Basic Law gives the Länder primary responsibility related to policy implementation. The Japanese Environment Ministry employs over 1,100 staff in its Kasumigaseki headquarters and several hundred more in its affiliated research centers and institutes (such as the National Institute for Environmental Studies, which employs approximately 270 scientists). The Dutch Ministry of Housing, Spatial Planning and Environment is staffed with more than 1,000 environmental policy personnel for a country of only 16.5 million people.

Action item (1): Enhance the capacity of the environmental administrative system of China's central government by increasing the budget and size of SEPA in order for it to adequately meet its responsibilities of analysis, monitoring, regulation, technical and professional training, and enforcement. Provide, through SEPA grants, for a significant portion of the costs of operating metropolitan and provincial level EPBs. Establish a grant program to fund innovative environmental management experiments by local governments.

Action item (2): Rationalize the internal management and organization of SEPA to enhance the development of integrated and comprehensive environmental policy tools. Establish an office responsible for policy integration reporting directly to the Minister and whose approval must be secured prior to any policy promulgation.

3.2 Adopt Best and Safe Practice in Business and Industry

2a. Fostering Best Practice of Environmental Performance in Industry

In Japan and the West there have been major movements towards more environmentally-friendly production processes. Examples include the European Union's packaging waste and recycling directives, which create strong incentives for manufacturers to reduce packaging and product waste by requiring them to take back waste packaging and consumer products (including electronics and automobiles); movements in Europe to promote ecological modernization; and Japanese efforts to promote a cyclical-based economic structure.

In recent years, China's leaders have expressed clear interest in promoting sustainable development (a circular economy) and renewable energy, as spelled out most recently in China's 11th Five Year plan and the passage of the renewable energy law. The challenge for China now is to find appropriate environmental governance mechanisms to help ensure the successful implementation of these goals.

To the extent that governments promote environment-friendly economic structures that reduce demands on resources and produce fewer emissions, waste problems can drastically be reduced (see Hu, Wu & Zhang: *An Analysis of China's Solid Waste Management*, Case Study). In 2005, China became the world's second largest economy when measured in terms

of purchasing power parity. Although the "ecological footprint" of the average Chinese is less than one-sixth that of the average individual living in the United States, China's growth rates have been averaging close to 9% a year for much of the last decade. Assuming continued strong economic growth in the coming decade, China's already severe pollution problems will reach crisis levels if strong measures are not taken to reduce harmful emissions and waste and promote renewable and clean energies.

To address this difficult reality, the government should harness the immense power of the market to address environmental problems and promote an eco-friendly economy.

Furthermore, in view of the knowledge and capital accumulated in the non-public sector, every effort should be made to mobilize this to facilitate the smooth implementation of environmental policy.

Action item: Provide incentives for companies to move towards cleaner production systems (e.g. for companies that undergo ISO 14,001 certification), promote front-runner green products, technologies and businesses, or those that take back products from consumers for recycling.

2b. Adopting Preventative Measures

China has been plagued by serious pollution problems and environmental crises. While it is important for societies to have measures in place to deal with accidents when they do occur, it is equally important that they set up systems for the prevention of such accidents. In the long-run, governments benefit if they require industries to pursue preventative measures that can help to avoid major accidents. In doing so, governments protect their citizens and their natural resources, limit costly legal and societal battles, and win societal trust. Also, as China moves into the production of more and more products, the use of hazardous substances is increasing. This produces both threats to human health and the environment. It also creates the potential for major accidents, as occurred with the November 2005 Songhua River benzene spill (see Mao, Li & Li: "Analysis of the Songhuajiang Crisis", Case Study). The key to prevention is strict liability for damages, strong enforcement with financially significant penalties, and rigorous facility permitting and siting procedures.

One of the common lessons from environmental crises experienced in Japan, the United States and Europe is that information disclosure to the public is an important tool to facilitate emergency preparedness and community involvement in reducing risk. Information disclosure is the building block of effective science-based environmental decision making. One of the most effective and inexpensive tools for reducing the chance of environmental problems and disasters is to require companies to report the release to the environment of hazardous substances.

One of the best known examples is the United States' Toxic Release Inventory (TRI), a compilation of annual reports of the releases of toxic chemicals from facilities made available to the public. This information can be used by any individual to learn about the chemicals in his/her neighborhood (www.scorecard.org). This information has been used by communities to press companies to reduce their emissions. Many companies have voluntarily reduced their use of chemicals due to this disclosure requirement. Also, the U.S. Community Planning and Right to Know Act of 1986 requires companies to notify authorities of the presence of extremely hazardous substances in excess of certain quantities (see Percival & Schreurs: "Environmental Crisis Management "C A Comparative Analysis", Occasional Paper). Following the U.S. example, the Japanese Diet introduced the Chemical Substance Releases Reporting and Management Promotion Law in July 1999, established a reporting system for the release and transfer of chemical substances (known as the PRTR system). Businesses are required to report on their release to the environment of 354 specific chemical substances (Class 1 Designated Chemical Substances) and their transfer as a form of waste. This information is made public on the website of the Ministry of the Environment.

Similarly, the European Union's Seveso II Directive applies to thousands of industrial facilities where dangerous substances are present in quantities that exceed the thresholds set in the directive. All facilities that fall under the scope of the directive must send notification to the competent authority regarding the chemicals on their site and must establish a Major-Accident Prevention Policy. Those with large quantities of designated chemicals must also establish a Safety Report, a Safety Management System, and an Emergency Plan. In addition, the directive mandates that EU member states control the siting of new facilities, modify existing establishments, and control the development of transport links, public places, and residential areas near the facilities. These Land Use Planning Policies aim to ensure that there is appropriate distance between hazardous operations and residential areas.

Action item (1): Establish reporting requirements for data to assure comparability of data across facilities and over time.

Action item (2): Provide funding for the establishment and maintenance of an internet-based reporting system, open to all interested parties.

2c. Setting Fines and Fees Sufficient to Discourage Polluters

Chinese environmental laws have routinely specified maximum penalties that can be levied for non-compliance. In general, these penalty caps are so low that they provide no deterrence to non-compliance. In other words, it generally pays to pollute rather than control emissions. For example, under China's Law of Atmospheric Protection and Control, the maximum penalty is set at 200,000 rmb (see Lu, Dudek, Qin, Zhang, Lin, Yang & Wang: "China's Environmental Enforcement Capacity", Case Study). The penalty is not adjusted for the size of enterprise, nor the severity of the pollution excursion. For large scale industrial enterprises, both capital and operating costs for modern pollution control is significantly greater than 200,000 rmb. In fact, a common problem is that enterprises may have purchased and installed control equipment but chosen not to operate it so as to save money. The penalty caps must be set to be at least as great as the financial gain from non-compliance if there is any hope of getting business to comply with environmental laws and regulations. Arguably, China does have the potential to levy administrative penalties such as shutting down enterprises which impose a heavier financial burden on the individual violator than the penalty caps imply. However, shutting down polluting enterprises is a rarely used enforcement tool since such an extreme action puts the environmental authority in direct conflict with local economic interests. Since enterprises are rational polluters they will take into account the very low probability of being shut down when evaluating the financial consequences of non-compliance and not take this enforcement option seriously.

An alternative approach is taken in the US SO₂ emissions trading program. Under this market-based program (cf. Dudek, Qin & Zhang: "SO₂ Control and Emissions Trading in China", Case Study), firms are given such wide latitude in the choice of compliance method that this flexibility has permitted uniquely high and automatically levied non-compliance penalties. Initially, these were set at \$ 2000 per ton of excess emissions with the penalty level adjusted for inflation over time. The resulting penalty for non-compliance is at least 10 times the cost of control. While this level of penalty may seem confiscatory, it is balanced by the fact that firms have full flexibility. Also of note is the automatic annual adjustment of the penalty level to insure its financial effectiveness over time. Compliance has been extraordinarily high. .

Action item (1): At a minimum, alter the current penalty caps to a daily limit for the duration of the violation rather than the current absolute limit. Greater precision in providing deterrence can be gained by estimating the financial gains from non-compliance through the use of models and setting the penalty on a case-by-case basis.

Experience has shown that reporting can not simply be voluntary; nor can it be assumed that companies will comply with reporting requirements unless there are strong incentives for

them to do so. International experience suggests that to ensure accurate and regular reporting of emissions and hazardous substance uses it is important to hold companies and individuals that are responsible for significant discharges and accidents liable for costs of response and recovery. Liability provisions have provided powerful incentives for reducing risky behaviors and reducing the likelihood of future disasters.

Action item (2): Establish stringent civil and criminal liability provisions for facilities that fail to comply with reporting requirements for hazardous substances and other environmental reporting requirements.

Action item (3): Establish civil and criminal liability provisions for operators of facilities responsible for environmental accidents.

Action item (4): Train judges and the procuracy in the basic information needed to establish culpability in environmental damage and compensation cases. Provide standard default methodologies for the calculation of the financial magnitude of such damages and compensation.

2d. Promoting Environmental Disaster Preparedness

International experience has shown the importance of establishing National Contingency Plans for responding to oil spills and toxic releases. It also highlights the importance of establishing a National Response Center with the mandate of receiving reports of toxic releases. The U.S. Congress adopted the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) - or what is commonly referred to as Superfund legislation. CERCLA required reporting to the National Response Center releases of hazardous substances above certain threshold levels (reportable quantities).

Action item (1): Require the establishment of provincial and county level emergency planning committees and provincial level emergency response commissions.

Action item (2): Establish a Hazardous Substances Response Fund for clean up of emergency spills. This can be financed with a tax on companies using hazardous substances, which, in turn becomes an incentive to reduce their use.

2e. Creating Independent Hazardous Substances Safety Boards

Independent regulatory and investigation boards are an important element of emergency response. In an effort to prevent accidents and to investigate those that do occur, Japan, Europe, and the United States have all found it necessary to establish independent investigation committees. Regarding chemical safety, the US Congress authorized in 1990 a Chemical Safety and Hazard Investigation Board that became operational in 1998. This independent, non-regulatory agency is charged with investigating the causes of chemical accidents. It investigates specific chemical accidents and general chemical accident hazards. Its purpose is to protect the workers, the public, and the environment. In addition, the board issues reports and can make recommendations to Congress for regulatory changes that would improve safety.

While it may seem self-evident that accidents need to be reported to competent authorities, it is not uncommon for perpetrators of accidents to try to cover them up. There are countless episodes of industries and governments that have tried to hide accidents from the public, or to try to create the image that a problem is not as serious as some might argue. History shows, unfortunately, that efforts to cover-up accidents often results in an intensification of damages and public and even international condemnation.

Action item: Require companies to report the presence of hazardous chemicals and establish emergency response plans and mechanisms with the requirement for timely reporting of any accident. Create Independent Hazardous Substances Safety Boards to examine companies' emergency response plans and carry out investigation when accidents occur.

2f. Corporate Social and Environmental Responsibility

Environmental governance in corporations is no less critical to the effective reform of

environmental management in China than for the society as a whole. The experience in most of the world is that companies directly control the vast bulk of environmental investments and expenditures and make most decisions directly affecting environmental quality. For example, in the US the private sector is estimated to account for more than 90% of all environmental expenditures. The Corporate Social Responsibility Movement (CSR) has taken root in China, but it has not significantly focused yet on the environmental dimension of corporate responsibility. This deficiency is important because a lack of effective internal corporate environmental governance contributes to a continuing lack of company priority for environmental performance.

Action item: Encourage companies to install corporate social and environmental reporting systems, and stimulate consumers to ask for strict social and environmental standards of the products they buy.

3.3 Enhance Stakeholder and Citizen Participation

The complexity and quantity of the environmental issues confronting all nations today has overwhelmed the capacity of even the strongest and best prepared of governments, working alone. Adequate response to these challenges requires that governments encourage and embrace open and transparent decision-making and implementation processes. Moreover, international experience confirms that multiple stakeholder and public involvement in environmental policy making and implementation processes can result in stronger regulations, strengthen understanding of policy goals, and increase the likelihood of successful environmental policy implementation. And the information base needed to engage the public and the wide variety of affected stake-holders in these processes is more often than not provided by non-governmental researchers and disseminated by press and electronic media that are neither governmentally controlled nor censored. .

The Chinese public is clearly becoming more aware of the causes and deeper costs of pollution, today demanding a greater voice, and taking direct action in thousands of cases of pollution and environmental degradation across the nation. As reported recently in the China Daily, "An overwhelming 97 percent of Chinese consumers care about the environment; and almost as many would boycott products made by companies which are insensitive to pollution" (March 17, 2006). While this survey was drawn from the educated middle class, in four major urban cities in China, the widespread environmental protests experienced in recent years suggests that concern for the environment is widespread throughout the population. Furthermore, some recent research (Land Economics, May 2006) analyzing the hypothesis of the so-called Environmental Kuznets Curve indicates that rising incomes may not be the real underlying cause of reduced emissions, but that they may be due to rising environmental awareness.

The Chinese government is responding and has become increasingly open to civil society participation in environmental decision making and implementation (Lehrack: "Environmental NGOs in China "C Partners in Environmental Governance"; Occasional Paper). Since 1993 environmental non-governmental organizations have been operating in China. The China Council reports over 1,000 non-governmental environmental organizations have been recognized by the state. And there are many thousands more operating informally (see Mol & Carter, 2006, 160). Still, while the Chinese government now recognizes the importance of these civil society groups, the TF believes that more can and should be done to support their active involvement in the environmental policy process. The new Administrative Procedures Law in China importantly contains provisions for public consultation in rule making. However, many of the public and NGO community are unaware of this opportunity. It will require a concerted effort by government to engage civil society in this process.

First of all, there remain numerous legal and administrative barriers in China that limit the

ability of groups to obtain non-profit status and to participate meaningfully in the creation of regulations, the identification of problems, and the monitoring of environmental problems and regulatory progress. Given the inherent resource limitations that confront NGOs in China, a more favorable taxation environment for benefactors and NGOs themselves should be established. NGOs should also be eligible to compete for public support grants and capacity building programs for environmental protection.

The positive results of opening the society further to environmental NGOs has been experienced in Japan where, despite a long history of environmental activism by citizens, there were many obstacles preventing the full realization of the abilities of non-governmental groups. In the past 15 years, the Japanese government has done much to improve the status of the environmental non-governmental community by simplifying procedures for obtaining non-profit status, creating incentives for individuals and corporations to contribute to NGOs by creating provisions for tax deductible contributions, and by establishing governmental financial support mechanisms for NGO activities. U.S. examples, moreover, suggest that providing NGOs with the right of standing in the courts to represent the interests of victims of pollution and natural resources can be one of the most effective means of furthering environmental protection goals. However, NGOs can play numerous positive roles in the system of environmental management. NGOs can pioneer new policy innovations through the creation of demonstration projects funded by private resources. NGOs have established public-private partnerships to leverage available resources to enhance environmental protection and resource quality. NGOs are effective in educating the public about environmental problems and needed public responses to solve them. NGOs can bring added expertise to the policy process augmenting the government's scarce resources. There are many measures that China could pursue to strengthen the role and contributions of the public to environmental governance. These include streamlining the process of obtaining non-profit status and taking measures to enhance NGOs' financial status. This could include creating tax incentives for individuals and corporations to donate to NGOs and providing them with preferential postal rates. Measures should also be taken to mitigate the psychological barriers limiting citizen and NGO participation. This can be done through governmental assurances that NGOs will be given a voice even when their perspectives differ from that of industries or government planners. Also importantly, the legal standing of citizens and NGOs in environmental disputes should be clarified and adjudication through the courts be encouraged.

A major challenge of any government is enforcement of regulations once they are established. In the cases of many European countries, including Germany and the Netherlands, Japan, and the United States, environmental groups have become important watchdogs of governmental and business behavior. Groups like BUND, Environmental Defense, Friends of the Earth, Greenpeace International, NABU, the Natural Resource Defense Council, the Sierra Club, and World Wildlife Fund/Worldwide Fund for Nature (WWF) have been important educators of the public about the importance of environmental protection. They have also reacted in cases where the government failed to enforce a regulation or a company violated the law. They have brought many suits on behalf of victims and damaged natural areas to the courts for trial.

The combination of environmental group activism and a powerful and independent judiciary have done much to give meaning to national legislation. It also helps to serve as a deterrent to companies that might otherwise violate the law.

Action item (1): Simplify and make easier the process of obtaining non-profit status and take measures to enhance NGOs' financial status.

Action item (2): Provide tax incentives for individuals and corporations to donate to environmental NGOs.

Action item (3): Mitigate the psychological barriers limiting citizen and NGO participation with governmental assurances that NGOs will be given a voice even when their perspectives differ from that of industries or government planners.

Action item (4): Enhance the legal status of citizens and NGOs clarifying their rights in environmental controversies, providing them legal standing in the courts on behalf of injured social groups and the environment.

Action item (5): Support public-private partnerships that develop environment-friendly enterprises, products, and processes.

3.4 Establish Multi-Sector Coherence and Foresight and Improve International Environmental Cooperation

4a. Establishing Policy Coherence and Foresight Capacity

After several decades building the capacity to better manage specific problems of air, water, soil, and toxic pollution and better manage the natural environment in general, the experience in virtually all OECD nations has been that strong regulation and enforcement, even when combined with clear legally mandated goals and objectives, may prove insufficient to counter or adequately modulate the imperatives of economic growth in a society. This problem is compounded by the propensity of the differing ministries of government to pursue their mission unconscious or unaware of the particularly long-term impacts of their actions on the environment.

There is no easy solution to the inherent conflict between economy and ecology, though several approaches have been and are being pursued. One of the most common approaches is to establish an advisory council to the state environmental minister, composed of environmental scientists, professionals, and stakeholders from affected sectors of industry and labor, NGOs, and the public to provide advice on policy directions and implementation strategies. In the U.S., this is represented by numerous advisory bodies to the state minister (Director of EPA) and at a higher governmental level, by the President's Council of Environmental Quality. In Germany, the Council of Environmental Advisors (Sachverständigenrat für Umweltfragen - SRU) and the Advisory Council on Global Change (Wissenschaftlicher Beirat Globale Umweltveränderungen - WBGU) were set up in 1971 and 1992, respectively, to provide independent expert advice from multiple disciplinary perspectives on the state and trends of the national and global environment, and policy recommendations to the German government. In addition, in 2001, a National Council on Sustainable Development (Rat für Nachhaltige Entwicklung - RNE) was established, consisting of a broad range of practitioners, representing various stakeholders. Japan too has developed a very elaborate and consultative process, with a series of Environmental Advisory Councils composed of critical stakeholders and tiering from the national down through the prefectural and municipal level of government. More recently, the Global Environmental Council of Japan was established, chaired by the Prime Minister, to advise the government not just on the traditional issues of environmental pollution and resource protection, but the challenges of global change (see Hirono: "The Environmental Advisory System in Japan," Occasional Paper).

In recognition of the need to better coordinate across ministries, all ministries should be required to have their own internal environmental department to provide consultation and advice for environmental issues and problems affecting each ministry's mandate. In addition, various ministries within government have been encouraged to share their plans and data, meet with one another to reconcile differences, and leverage their scientific assessments and knowledge in developing national goals and objectives. The "planning cycle" process instituted by several OECD countries has taken this approach the furthest, including "explicit objectives and target-setting, evaluation of progress in achieving them, providing feedback to policy makers and adjusting priorities on the basis of lessons learned" (OECD, op. cit.,

2006, Ch. 17, p. 16). Of these, the Netherlands provides the most comprehensive multi-sector national environmental policy planning process (NEPP 1 and 2). A crucial feature of the Dutch environmental policy planning is its organization along environmental themes (climate change, acidification, waste, etc.) and target groups (industry, agriculture, transport, consumers, etc.) rather than environmental media (water, air, soil, etc.) or individual pollutants. This enables an integrated, cross-media approach to sets of related problems and the development of coherent, cross-sector policies for groups of polluters. Ambitious long-term environmental goals and strategies are established in close co-operation between target groups and all ministries involved, which reduce uncertainty about future policies and enhance commitment to those policies (see Knill & Liefferink, 2006).

Another approach is to require the review of all major developments for consistency with the goals of the various ministries affected – development, infrastructure, urban planning, environmental, agricultural, etc. – prior to granting approval to proceed. This is the intent of the environmental impact reports required universally in OECD nations – and to a growing extent in China. The process of requiring developers and the communities in which they are located to consider the effects of major developments on the environment and natural resources has proven useful, especially in helping to avoid the most harmful unwanted impacts. However, these reports are typically only advisory and, in many instances, have become perfunctory. In others, they have been used by anti-development factions to impede development for their self-interest rather than to protect the environment. It is especially important to conduct post hoc reviews of the effectiveness of reviews. For example, the Environmental Impact Assessment conducted for firms prior to permitting often requires mitigating actions. To what extent have these compensating actions been implemented?

A recent approach being taken by several nations is to avoid to the greatest extent possible the production of pollution and harmful environmental effects in the first instance, through anticipating and mitigating these in advance. This is being accomplished through using less energy per capita and per production unit, adoption of cleaner energy sources (see Bechberger & Reiche: “Good Governance for Renewable Energies – The Example of Germany”, Occasional Paper), eliminating if not greatly minimizing toxic and hazardous materials in product manufacture and agriculture, designing products for disassembly, requiring end-of-life take-back by manufactures, fostering ecological modernization modes of technology development and production, practicing eco-friendly and water-saving agriculture, fostering green and “smart” urban planning, and adopting principles of harmonization and a circular economy. All are examples of policies that anticipate and avoid harm, albeit mostly on a pilot or limited base.

All of these approaches require an uncharacteristic degree of openness and transparency within and among government agencies. In recognition of this fact, national governments have had to compel their ministries and leaders to be more forthcoming. This was one impetus behind the “freedom of information” laws and the toxic reporting inventory (TRI) system adopted in the US. Another was to provide citizens with environmental information as the key to effective public participation. In addition, these disclosure provisions required companies to make public estimates of emissions that they previously had not measured or reported. It also was one of the major motives behind the Directive on Freedom of Access to Environmental Information of the EU (see Liefferink: “New Modes of Environmental Governance – The Experience of the European Union”, Occasional Paper).

None of these approaches has prevented all the harmful environmental effects of resource extraction and economic growth. However, institutional and policy experimentation has proceeded further toward this goal in Japan and the West, and this has resulted in a relatively better balance between economic growth and environmental protection.

Where such progress has been made, moreover, it has occurred in large part when the top

leadership of the nation has insisted that those responsible at the ministerial level and likewise at sub-national levels work together, in what have been new, forward planning inter-sectoral institutions within government. In some instances, this is taking place in open institutional forums, inviting comment and participation by the public, private, and non-governmental actors in society. It has worked most effectively where the nation's political leaders have developed methods of information gathering, verification, and assessment that provide more representative feedback than any single ministry or source of assessment can be expected to provide.

In view of the necessary steps remaining for China to achieve the level of balance being achieved elsewhere, and in consideration of its absolute size, commitment to an unprecedented pattern of economic development, and relatively modest capacity to address domestic and international environmental issues, the TF recommends developing the institutional capacity for foresight and coordination at the ministerial and governmental levels. The body should be required to hear and make recommendations on inter-ministerial disputes over environmental responsibilities and practices. Participants should include the National Development and Reform Commission (NDRC), Ministry of Finance (MOF), Ministry of Construction, Ministry of Agriculture (MOA), Ministry of Land and Resources, Ministry of Water Resources, China Meteorology Administration, State Forestry Administration, Ministry of Health, and, of course, the State Environmental Protection Administration (SEPA).

While SEPA is responsible for developing and implementing environmental policies for the nation, it so far lacks the political standing and institutional forms for bringing together the relevant ministries, industrial sectors, and the public to carry out its mission (see Li & Zusman: "Institutional Capacity and Environmental Regulation in China", Case Study).

In addition to the above recommendation to elevate SEPA to cabinet level, the TF recommends that a cabinet level coordinating body be established to share and reconcile competing and conflicting national priorities, reporting its findings on a regular basis to the government, available to the public. This could be similar to the former Environmental Protection Commission of the State Council (cf. OECD, 2006, p.18). However, the most promising model for serving the interests of the government as a whole, and reconciling different interests and perspectives in society, and doing so at the very highest level, is provided in the example of the Japanese Global Environmental Council, with the Prime Minister as Chair, and all stakeholders and citizens having access to the deliberative and policy recommending process of the council.

Action item (1): Establish a cabinet-level inter-ministerial body to share scientific analysis, performance data, and each ministry's respective annual and multi-year strategic plans for achieving the environmental goals of the nation.

Action item (2): Establish a high level multi-sector, multi-stakeholder, national council of experts, chaired by the Prime Minister, to assess compatibility and reconcile differences in goals and strategies of the various ministries and interests of society as they affect the environment, and to advise the President, the Premier, and the State Council on environmental policy.

4b. Improving International Environmental Cooperation

There is little question that China has become a major East Asian economic and political superpower and that it is rapidly moving towards global superpower status. The increasing interconnectivity between China, its neighbors, and the global community in commerce is quickly being matched by its connectivity and responsibility to reduce transboundary and global environmental problems, to ensure the protection of the environment and of natural resources beyond its borders.

The East Asian region still has few cooperative institutional forums for addressing

transboundary pollution problems or international environmental crises although some steps have been taken in this direction with the formation of the Tripartite Environment Ministers meetings and various river basin commissions. As the largest polluter in the region, China should take the lead in proposing the establishment of an East Asian inter-governmental environmental commission to address transboundary pollution problems, emergencies, and the links between trade and the environment.

While China has become involved in an increasingly large number of regional commissions, these are typically established as reactive, rather than preventative bodies. An East Asian Environmental Commission could be tasked with harmonizing data gathering and reporting procedures, dissemination of monitoring data, joint research into the causes and consequences of transboundary pollution matters, promotion of environmental and nuclear safety (including nuclear waste disposal), and addressing cases where regional trade and environmental concerns are in conflict. This could be done through existing mechanisms such as the Tripartite Environmental Ministers meeting or the ASEAN plus three groups, or through the creation of a new inter-governmental body. Most importantly, a more assertive and forward looking approach is needed.

One possible model is the North American Commission on Environmental Cooperation, which was set up to protect, conserve, and improve the environment through increased regional cooperation and public participation. Another model would be the European Environment Agency (EEA) in Copenhagen, which, however, is primarily a monitoring and data gathering center.

Action item (1): China should propose to other nations in the region the establishment of an Environmental Commission to promote a comprehensive regional approach to the protection, improvement, and sustainable management of its environment and natural resources.

Action item (2): China should prepare for playing a more active role in the implementation and further development of the United Nations environmental conventions and multi-lateral environmental agreements (MEAs), especially on climate, biodiversity, desertification, water, forests, and persistent organic pollutants in order to insure mutually agreed goals are met and fortified.

Action item (3): Special efforts should be made to enhance the effectiveness of China's environmental diplomacy and participation in global environmental governance by strengthening the environmental training of China's diplomatic corps.

4 Conclusions

China is at a cross road. Environmental expectations are rising among its citizens along with impatience at the persistence and magnitude of environmental insults and damages. World attention is focused on China as a result of its rapid economic growth and emergence on the global scene, as exemplified by the hosting of the Olympics in Beijing in 2008. Yet, increasingly the image of China is as the world's factory with rampant pollution blanketing the landscape, urban areas clogged with cars, skies filled with the emissions from innumerable smokestacks, and rivers too polluted to sustain either life or productive use.

While this is a caricature, it contains too many elements of contemporary reality to ignore. China has many good environmental laws on the books. Its environmental professionals are dedicated and serious about their charge. There has been considerable forward progress in managing environmental problems. However, the fundamental problem facing China is the mis-match of the speed of change driven by global market forces in the business sector and the relatively slow pace of institutional change to cope with the unwanted and damaging by-products of rapid economic growth. The work of this Task Force has focused on the key elements of environmental governance that can be improved in order to enhance China's prospects for dealing with these growing environmental challenges.

Of special importance is the need for a coherent master plan for institutional reform in

environmental governance. The Task Force has attempted to identify key elements of such a plan by focusing on changes in institutional arrangements and processes that - if adopted - could significantly enhance the effectiveness of China's environmental governance. The members of the Task Force firmly believe that the goal of a Xiaokang society can only be attained if China's population enjoys a high level of environmental quality.

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